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Minimizing Unplanned Extubations in the Intensive Care Nursery

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Minimizing Unplanned Extubations in the Intensive Care Nursery

Graduate Nurse Residency Program

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- Dr. Jean Pallotto
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- Beckie Palmer RN, MSN
A3 Overview

A3 for Problem Solving

**Theme:** Reducing Unexpected Pneumonia in the Intensive Care Nursery

**Owner:** ICM Graduate Nurse Resident Team

**Date:** 1/1/2018

**A3 Team:** Lindsey Borschow, Cecily Horton, Mikee Collins, Jodie Scherer

**Department:** Director Signature:

**KU Scholar:** Bradley Hunter

**Clarify the Problem:** Patients with experience an unexpected pneumonia (PN) in the Intensive Care Nursery (ICU) continue complications such as increased length of stay, higher costs, longer recovery, and possibly mortality. The lack of standardization of tube sizers when nasal intubation is a contributing factor. To improve PN rates, by ensuring compliance of a standardized process for ET tube management, we began to reduce these events at Children’s Mercy. The current goal for PN at Children’s Mercy is 5% vs. 25 out of 100 ventilator days.

**Break Down the Problem:**

- **Gain Chart**
- **Process Chart**

**Set a Target:**

- Target goal is to increase holding of ET tube during an event from 40% to 70% by February 1, 2019.

**Identify Root Cause:**

The biggest root cause, accounting for just over 75% of UPE are:

- Patient Specific
- Medical Issues
- Intubation
- Unintentional

**UPE by Cause**

<table>
<thead>
<tr>
<th>Cause</th>
<th>Percentage</th>
</tr>
</thead>
<tbody>
<tr>
<td>Patient Specific</td>
<td>32%</td>
</tr>
<tr>
<td>Medical Issues</td>
<td>28%</td>
</tr>
<tr>
<td>Intubation</td>
<td>20%</td>
</tr>
<tr>
<td>Unintentional</td>
<td>10%</td>
</tr>
</tbody>
</table>

**Interactions**

- Decrease ET tube manipulations
- Increase awareness and education
- Multi-disciplinary care coordination

**Follow Up**

- Process needs to be standardized to implement safe management of all patients.
- Need to follow all intubated patients to collect data.
- Audit comprehensive review to identify PN events.
- Use educational approaches and train different nurses that are effective.
- If successful, we will share our knowledge in our next cycle of recommendations.
Patients that experience an unplanned extubation (UPE) in the Intensive Care Nursery (ICN) can have complications such as increased length of stay, code events, airway trauma, hypoxemia, and pulmonary injury. The lack of standardization of Endotracheal Tube (ETT) management is a contributing factor to increased UPEs. By ensuring compliance of a standardized process for ETT management, we hope to achieve a reduction in UPEs in the Children’s Mercy ICN. The current goal for the ICN at Children’s Mercy is <1 UPE out of 100 ventilator days and the ICN year to date current rate of UPE is 1.2.
Breakdown the Problem

Pareto Chart for UPE
2018 (n=44)
Set a Target

- Target goal is to increase holding of ET tube during an x-ray from 48% to 70% by February 1, 2019.
Inconsistent application of ET tube expectations
- ET tube will be held during chest X-rays
- Location of ET tube during X-rays will be documented real-time

![Pie chart showing the distribution of UPE by cause]

- Patient specific: 21%
- Neobar issues: 18%
- Unwitnessed: 16%
- Retaping: 16%
- Procedures: 7%
- Repositioning: 7%
- Tape issues: 11%
- Holding: 2%
- Secretions/Emesis: 2%

Jan – Oct 15, 2018 (n=44)
No UPE November

Education & Training in the ICN

- Practice changes
- Expectations for chest x-ray
- No UPE toolkit
- Charting change
- Education reminders
Develop and Implement Countermeasures

**AIM STATEMENT**
Target goal is to increase holding of ET tube during an X-ray from 48% to 70% by Feb 1, 2019

**KEY DRIVERS**
- Standard of care for ETT
- Decrease ETT manipulations
- Increase awareness and education
- Multi-disciplinary care coordination

**INTERVENTIONS**
- Audits of ETT holding during X-ray
- Educate on need to hold ETT during X-ray
- Educate on real-time documentation
- Signage
- RT present at bedside for X-ray
- Educate radiology technicians
Develop and Implement Countermeasures

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Develop and Implement Countermeasures

<table>
<thead>
<tr>
<th>No UPE November: Holding ETT during Chest Tube Audit</th>
</tr>
</thead>
<tbody>
<tr>
<td>Date:</td>
</tr>
<tr>
<td>Date:</td>
</tr>
<tr>
<td>Was a CXR done during shift?</td>
</tr>
<tr>
<td>If yes, was ETT held during CXR?</td>
</tr>
<tr>
<td>If held, by whom?</td>
</tr>
<tr>
<td>If CXR was done, was documentation completed noting location of ETT during CXR?</td>
</tr>
<tr>
<td>For all ETT patients:</td>
</tr>
<tr>
<td>Does RN know position of ETT is to be documented for all CXRs?</td>
</tr>
<tr>
<td>Does RN know where to document position of ETT for CXRs?</td>
</tr>
</tbody>
</table>
Develop and Implement Countermeasures

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- Signage
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- Educate radiology technicians

Children’s Mercy
KANSAS CITY
Signage for ETT Cards

Design for No UPE November

Hold tube for every x-ray

Design #2 for everyday use

Hold tube for every x-ray
Develop and Implement Countermeasures

**AIM STATEMENT**

Target goal is to increase holding of ET tube during an X-ray from 48% to 70% by Feb 1, 2019

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**INTERVENTIONS**

- Audits of ETT holding during X-ray
- Educate on need to hold ETT during X-ray
- Educate on real-time documentation
- Signage
- RT present at bedside for X-ray
- Educate radiology technicians
Intubated patients

Please make sure an RT and RN are present to verify tube placement and to hold the tube during every x-ray.
Check Results and Process

**ETT held during X-ray:**
- September: 48%
- October: 50%
- November: 85%
- December: 94%
- January: 91%

**Documentation indicating location during X-ray:**
- September: 79%
- October: 88%
- November: 98%
- December: 100%
- January: 86%
Standardize and Follow Up

- The process needs to be standardized to implement safe management of all patients.
- We followed all intubated patients to collect our data.
- Unit committee will continue to audit and monitor compliance to standards. If compliance decreases, then unit will re-educate or re-approach and find a different process that is effective. If successful, we will share our knowledge and spread to other populations.
References

References


References

- Surana, P. (2014). *Preventing accidental extubations in NICU - a quality improvement project*. Archives of Disease in Childhood [Abstract].